

WV
276
M981d
1915

A Drugless Treatment For
**PARTIAL DEAFNESS
AND DEAFNESS**

WV 276 M981d 1915

51620520R



NLM 05269760 6

NATIONAL LIBRARY OF MEDICINE

SURGEON GENERAL'S OFFICE
LIBRARY.

ANNEX

Section

No. 113,
W. D. S. G. O.

No. 223358

3-513



NATIONAL INSTITUTE OF HEALTH

PROPERTY OF THE
NATIONAL
LIBRARY OF
MEDICINE

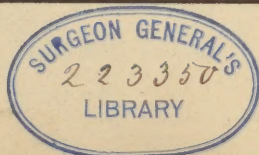
A Drugless Treatment for PARTIAL DEAFNESS AND DEAFNESS

Osteopathic
Somapathic
Naturopathic
Chiropractic
Mechano-Therapic

By

Chas. H. Murray, A. B., D. O., D. C.
and M. S. Murray, B. S., D. O., N. D.
D. So.

Elgin, Illinois [The Murray Publ. Co.]
[1915]



Annex
WV
276
M981d
1915

Copyright 1915

By Charles H. Murray

Transferred from the Library
of Congress under Sec. 50,
Copyright Act of March 4, 1909

JAN 25 1915

©CLA391451

no 2

A Drugless Treatment For Partial Deafness and Deafness

IMPORTANT.

Introductory Remarks.

The greater part of all cases of deafness, or partial deafness, is caused by affections of the Eustachian tube. In many cases the mucous membrane lining the tube is thickened and the lumen of the tube lessened. This thickening of the mucous lining is caused in many cases by catarrh and the exanthemata of childhood. As the mucous lining of the tube is continuous with that of the nasopharynx we can readily see how it could become inflamed by continuity of tissue.

Many of the cases are started by suppurative inflammation of the middle ear. Fully one-half of all children who are partially deaf and over 25 per cent of all deaf-mutism can be laid to suppurative inflammation of the middle ear, in childhood.

The problem in most of the cases, then, of deafness will be to open the Eustachian tube, keep it clear of all discharges, mucus, and other exudates, and by proper treatment remove all irregularities and folds

which tend to hold the discharges around the mouth of the tube, and by massage to break up all adhesions which keep the tube from normally discharging.

By far the most cases will have the soft palate enlarged. This, by being raised into the nasopharynx, forms an obstruction to the orifices of the Eustachian tubes, and also forms pockets which hold purulent material in contact with the tube mouths. So we must massage over the soft palate and manipulate it as specially directed to reduce it to normal size.

Manipulate or massage as directed and normal circulation will be restored and the thickness of the mucous membrane reduced and the patency of the tubes restored. This will secure an equal pressure of the air through the external canal and the Eustachian tube on the tympanum.

In presenting this subject I deem it advisable to present the subject of the anatomy of the ear first. One should thoroughly understand this subject before treating so delicate an organ as the ear. If we are conversant with the anatomy of this part of the body a little review may prove helpful.

This study or review may suggest a reason why such a simple treatment as outlined later is so effective and so lasting in its results. Truly Nature, when aided to a certain extent, has great restorative powers.

LESSON 1.

The Ear.—Anatomy.

In considering the anatomy of the ear it is considered as three parts, the **External Ear**, which is made up of the auricle, or pinna, and the auditory canal, which extends to the membrana tympani.

The **Middle Ear**, or tympanum, which comprises the membrana tympani, the atrium or tympanic cavity, the mastoid cells and the Eustachian tube.

The **Internal Ear**, or labyrinth, which we divide into the vestibule, semi-circular canals, cochlea and the terminals of the auditory nerve.

Further Description.

The **Auricle**, or **Pinna**, is a large, irregular shaped appendage. This consists of a layer of cartilage cover by perichondrium, over which is a thin layer of skin. This skin contains numerous sweat and other glands and has short, downy hairs. The pinna has ridges and depressions due to the folding of the cartilage, which are as follows:

The **Concha**, which leads into the auditory canal.

The **Tragus** is a pointed eminence situated in front of the concha, and has small tufts of hair on its lower border.

The **Antitragus**. This projection is smaller than the tragus and is opposite to it, and is separated by a deep notch.

The **Helix** is the outer curved edge of the pinna.

The **Antihelix** is the curved ridge in front of the helix and parallel to it.

The **Fossa of the Helix**, a narrow depression between the helix and the antihelix.

Lobe of the ear is the soft, pendulous portion.

The **Muscles** of the auricle are the musculus helicis major, the musculus helicis minor, the tragus, the antitragicus, the transversus auriculæ and the obliquus auriculæ.

The **Arteries** which supply the auricle are posterior auricular, which comes from the external carotid. The anterior auricular, which comes from the carotid by way of the temporal. The auricular which is a branch of the occipital. The veins accompany the arteries.

The **Nerve supply** of the auricle is composed of the aricularis magnus, from the cervical plexus, the auricular, which is called Arnold's nerve and arises from the pneumogastric. The auriculo-temporal, which is a branch of the inferior maxillary division of the fifth nerve. The occipitalis major and minor. The posterior auricular, which arises from the facial.

The **Auditory canal** is about one and one-eighth of an inch in length. This canal is partly bony and partly cartilaginous. It extends from the concha to the membrana tympani in an irregular curved

course. The cartilaginous portion is about one-half an inch long. It has an integument in which there are sebaceous and ceruminous glands and hair follicles. Behind this canal are the mastoid cells, in front is the condyle of the lower jaw, below the canal and to the front of it is the parotid gland.

LESSON 2.

The *Membrana Tympani* (or Drumhead).

This forms the outer wall of the tympanum and is situated at the inner end of the auditory canal. Its direction is downward and inward and seems to be continuous with the upper wall of the canal. When examined with a light it has a bluish-gray appearance. We will note at its upper border a pointed tubercle of a whitish look. This is made by the short process of the malleus, while the handle of the malleus forms a white stripe, which runs downward from the tubercle. There is a light spot which spreads downward from the end of the handle of the malleus. This has a darker central portion called the shadow of the umbo. Some call it the navel. The upper part of the drumhead presents also a flaccid appearance caused by loose tissue, vessels, and nerves. This is called Shrapnell's membrane.

The *Membrana Tympani* has three layers. The outer layer is of skin, which is a continuation of that which lines the canal. The middle layer has

two sets of fibers, the outer radiating from the handle of the malleus and the inner layer has circular fibers. Between the two layers are the short process and the handle of the malleus. The inner layer is a mucous lining.

The **Arteries** which supply the drumhead are the deep auricular, the tympanic branches of the internal maxillary and internal carotid arteries, the vidian, which is a branch of the internal maxillary, the stylo-mastoid from the posterior auricular.

The **Nerve** supply is from the auriculo-temporal branch of the inferior maxillary; the auricular branch of the vagus, and the tympanic plexus.

The Tympanum (or Middle Ear, or Drum).

This is situated in the petros portion of the temporal bone. It forms a small cavity about one-half an inch antero-posteriorly, two-fifths of an inch vertically, and one-tenth of an inch transversely. This cavity communicates with the nasopharynx by way of the Eustachian tube. The mastoid cells are behind the drum and internally is the labyrinth. It contains the ossicles and some of the chorda tympani nerve. On the inner wall, which is the outer wall of the labyrinth, is the fenestra ovalis, or oval window, leading into the vestibule, and closed by the base of the stapes with its ligament or membrane. Just below this opening is another, the fenestra rotunda, or round window. This leads into the scala tympani of the cochlea, and is closed by a membrane of three layers.

We note on the outer wall, or the drumhead, the *iter chordæ posterius*, where the *chorda tympani* nerve enters, and the *iter chordæ anterior*, where the *chorda tympani* nerve escapes into the canal of Huguier; also the Glaserian fissure, which receives the long process of the malleus, also the tympanic branch of the internal maxillary artery.

There may be noted on the posterior wall the opening of the *antrum mastoideum*, which opens into the mastoid cells, the pyramid, a projection which contains the *stapedius* muscle, the tendon of which leaves from the summit of this pyramid. There is also the vertical portion of the ridge of the *aquæductus fallopîi*.

On the anterior wall, which separates the eardrum from the internal carotid artery, we have the opening of the canal for the *tensor tympani* muscle, which is on the summit of a small conical eminence, called the anterior pyramid or the *processus cochleariformis*. Separated from this by the *septum tubæ*, a thin bony plate, is the opening of the Eustachian tube.

LESSON 3.

The Ossicles of the Tympanum.

These are three small, movable bones, forming a chain across the cavity of the tympanum and connecting the *fenestra ovalis*, or oval window, with the *membrana tympani*. These bones are the mal-

leus, or hammer, the incus, or anvil, and the stapes, or stirrup. The malleus has a head, neck, short process, long process, and handle. The head articulates with the incus. The short process and the handle are fastened to the membrana tympani. The long process enters the Glaserian fissure, to which it is attached by ligaments.

The incus, or anvil, has a head and a long and a short process. The head, which is really the body of the anvil, articulates with the malleus. The long process of the incus has a rounded end, the os obiculare, which articulates with the head of the stapes, and the short process joins the fossa incudis, the margin of the opening into the mastoid cells.

The stapes, or stirrup, has a head, neck, two branches, and the base. Its head articulates with the incus, while its base is connected with the membrane closing the fenestra ovalis.

The Muscles of the Tympanum.

There are two well-recognized muscles, the tensor tympani and the stapedius. The former arises from the petrous portion of the temporal bone and the cartilaginous portion of the Eustachian tube and its bony canal, and is inserted into the handle of the malleus. It makes the membrana tympani tense by drawing it inward. Its nerve comes from the otic ganglion.

The stapedius muscle arises from the pyramid and is inserted into the neck of the stapes. It draws

the head of the stapes backward and compresses the contents of the vestibule. Its nerve arises from the facial.

The Ligaments of the Tympanum.

The malleus has four ligaments, the anterior, superior, external, and posterior. The latter two ligaments are often described as one and named the axial ligament. The anterior is the strongest, and the function of these and other ligaments of the tympanum is to hold the small bones in position. The incus has the posterior attached to the end of the short process. The annular ligament of the stapes extends around the base of the stapes and connects it with the ovalis fenestra.

The Arteries of the Tympanum.

These are six in number. The tympanic is a branch of the internal maxillary and supplies the membrana tympani. The stylo-mastoid is from the external carotid and comes by the way of the posterior auricular. This enters the tympanum at the styloid mastoid foramen. The petrosal is a branch of the middle meningeal artery. It is quite small and enters the tympanum by the way of the hiatus Fallopii. Another tympanic artery is a branch of the internal carotid artery. A branch from the vidian artery and a branch of the ascending pharyngeal artery, which is from the external carotid, both follow the Eustachian tube.

LESSON 4.

The Nerves of the Tympanum.

Jacobson's nerve, which is the tympanic branch of the glossopharyngeal, helps in the formation of the tympanic plexus. This plexus supplies the mucous membrane and the Eustachian tube. A branch of the facial nerve, the tympanic nerve, supplies the stapedius muscle, while the tensor tympani muscle is supplied by a branch of the otic ganglion. The chorda tympani from the facial nerve enters the tympani by the iter chordæ posterius. It passes between the handle of the malleus and the long process of the incus. It leaves the tympanum through the iter chordæ antierius.

The Eustachian Tube.

This tube connects the tympanum with the nasopharynx and thus allows the air in the middle ear to communicate with that of the pharynx. This tube is about one and a half inches long and varies in diameter from one-tenth to two-fifths of an inch. The outer third consists of bone and the rest of cartilage. The smallest diameter of the tube is at the junction of the bony and cartilaginous portion where it is called the isthmus tubæ. The mucous membrane of the tube is continuous with that of the pharynx, and it is lined with ciliated epithelium. The movement of the cilia is toward the pharyngeal orifice. The direction of the tube is downward, in-

ward, and forward. It forms an angle with the horizontal plane of about thirty-five degrees. The bony and cartilaginous portions of the tube join each other at an obtuse angle. The cartilaginous portion of the tube is closed by its walls coming together, except at the pharyngeal orifice. Near the pharyngeal orifice there is quite an amount of adenoid tissue, which Gerlach has called the tube of tonsil. The tube is opened during the act of swallowing by the salpingo-pharyngeus and dilator tubæ muscles. The levator palati muscle closes the pharyngeal orifice.

The pharyngeal orifice is located in the upper lateral wall of the pharynx and is above the level of the nasal floor.

Arteries and Nerves of the Eustachian Tube.

The arteries are the ascending pharyngeal and vidian from the external carotid artery. The nerves are pharyngeal branches of the pneumogastric, sympathetic, and glossopharyngeal and the spinal accessory nerve.

LESSON 5.

The Internal Ear, or Labyrinth.

The internal ear, or labyrinth lies imbedded in the petrous portion of the temporal bone. It is the essential part of the organ of hearing. The labyrinth consists of the osseous and membranous labyrinth.

The osseous labyrinth comprises the vestibule, or central cavity, the semicircular canals, which are behind the vestibule, and the cochlea, in front of the vestibule. The osseous labyrinth contains a fluid called the perilymph, in which is a membranous reproduction of the several chambers, called the membranous labyrinth, which contains a fluid called the endolymph. Within the membranous labyrinth is the utricle, behind the vestibule, the membranous semicircular canals, in the osseous canals, the saccule, in the vestibule and the membranous cochlea, enclosed in the osseous cochlea.

The vestibule forms the common central cavity of communication between the parts of the internal ear. From the walls of this vestibule the semicircular canals arise like arches. There is a canal through the anterior wall of the vestibule leading into the cochlea. The vestibule is one-fifth of an inch in vertical diameter; laterally it measures about one-tenth of an inch. Within the osseous labyrinth is the membranous labyrinth, containing the endolymph and nearly surrounded by the other fluid, perilymph. This membranous labyrinth is really a system of cavities with membranous walls.

The internal ear also contains the ends of the auditory nerve, which are distributed to the internal ear only. It has the internal auditory canal, by which the eighth or auditory nerve enters from the brain. There is also the organ of Corti, which is the terminal and receptive apparatus, and is to the ear what the retina is to the eye.

The Cochlea has an upper and lower space of nearly equal size separated by a diaphragm of bone and membrane. The bony diaphragm is called the lamina spiralis ossea, and the other membrana basilaris. The upper cavity communicates with the vestibule and the lower cavity ends at the round window. The upper cavity is divided by Reissner's membrane into the scali vestibuli and the scali media. The latter contains endolymph and the organ of Corti. The cochlea resembles a snail shell. It is a bony tube about one and a half inches long and has a diameter of about one-tenth of an inch, which tapers to a diameter of one-twentieth of an inch. It is coiled about a central, conical axis for two and three-fourths turns.

The Organ of Corti.

The organ of Corti is situated on the inner surface of the membrana basilaris midway between the outer wall of the ductus cochlearis and the lamina spiralis ossea. It extends from the vestibule to the cochlea, and receives nerve terminals from the auditory nerve. The organ of Corti is formed by the inner and outer rods of Corti which unite in the form of an arch. These rods of Corti number about 10,000. With these rods are ciliated or hair cells. These are sometimes called the "hearing cells," and there are about 23,000 of them. They receive terminal filaments from the auditory nerve.

LESSON 6.

The Semicircular Canals.

They are three C-shaped bony tubes nearly an inch long and about one-twentieth of an inch in diameter. At each end of each canal there is a flask-shaped dilatation about one-tenth of an inch in diameter called the ampulla. About one-third of the space inside these canals is occupied by the membranous semicircular canals. There is a rich tissue occupied by blood vessels between the bony and the membranous semicircular canals.

The Otoliths.

These are small granular or crystalline particles which are on the walls of the utricle, saccule, membranous canals and in the fluid of the cochlea. They are of mineral matter covered by mucus. We do not understand their function.

The Auditory Nerve.

The auditory or eighth nerve has its superficial origin from two roots, one from between the pons and restiform body; the other winds around the restiform body. It enters the internal auditory canal with the facial nerve, at the bottom of which it divides into the vestibular and cochlear divisions. The vestibular nerve has on it the ganglion of Scarpa in the internal auditory canal, after which it divides into three branches which supply the utri-

cle, saccule, and the ampulla of the external and superior semicircular canals. The cochlear branch of the auditory nerve sends branches to each of the hair cells.

The Vessels of the Internal Ear.

The internal auditory, which comes from the vertebral by the way of the basilar branch, divides into the vestibular and cochlear branches. It accompanies the auditory nerve into the internal auditory meatus.

The styloid mastoid from the external carotid by the way of the posterior auricular supplies the internal ear with some small branches.

The veins accompany the above arteries and after uniting empty into the superior petrosal sinus.

Functions of the Tympanic Membrane.

The function of this membrane is to receive aërial vibrations which it conveys to the organ of Corti through the mechanism of the ear. The tympanic membrane is capable of responding to vibrations which have rates of from sixty to 4,000 per second. It can do this because it is unevenly stretched and it is loaded with the tympanic bones which act as dampers to the vibrations, the same as when the violin player "damps" the strings with his fingers when he wishes the vibrations or note to cease.

Function of the Ossicles.

The handle of the malleus, being imbedded in the

membrana tympani, receives the effect of any condensation of air in the external auditory canal. This causes the long process of the incus to move inward as the malleus rotates on the axial ligament and locks into the incus at the malleo-incudal joint. This causes the incus to push in the stapes, and this sets up vibrations in the perilymph and endolymph. Just the reverse of this is caused when the air in the external auditory canal is rarefied, as far as the motion of the stapes is concerned. But any motion of this ossicle sets up vibrations in the labyrinthic liquids.

When deafness is caused by impairment of the membrana tympani the sound waves may be transmitted through the bones of the head. Sometimes this may be done by placing the end of a vibrating body, as a tuning-fork, between the teeth or against the skull. If the deafness is caused by impairment of the essential auditory apparatus there is no means, or device, by which we can temporarily make a person hear.

Various Functions Not Clearly Understood.

From the position of the vestibule and cochlea we believe they have their part to perform in the sense of hearing. There have been various speculations as to the part played by the rods of Corti, but it is not very well understood. The semicircular canal appears to be more of an organ for the purpose of preserving the equilibrium of the individual than helping the hearing. If it has any great work to

perform in the function of hearing it is not understood.

LESSON 7.

Treatment of Deafness.—Tests for Hearing.

It is always necessary in treating a case of deafness to determine whether the deafness is caused by an impairment of the essential organ of hearing or the conducting apparatus. We must know whether the difficulty is in the labyrinth or auditory nerve, or whether it is due to an obstruction of the Eustachian tube, the external auditory canal, or some affection of the tympanic membrane. We expect, under our treatment, greatly to benefit those cases where the deafness, or partial deafness, is due to some impairment of the conducting apparatus. And we find that the greater part of deafness is due to the latter cause.

When a vibrating tuning fork is placed against the head of a person whose hearing is entirely normal he will hear it better if both ears are closed. Or if one ear is closed he will hear the fork better in that ear. So if the hearing in one ear is impaired because the Eustachian tube is closed from any cause the vibrating tuning fork will be better heard in that ear. This will also be the case if the external auditory canal is obstructed, or if the membrana tympani is thickened. In making this test the handle of the tuning-fork should be held against the teeth or on the head midway between the ears.

If the difficulty in hearing is due to an affection of the labyrinth or of the auditory nerve, the vibrating tuning-fork will not be heard as well in the impaired ear.

Some persons will imagine that they hear the tuning-fork better in the ear in which they are accustomed to hear well, under other circumstances. Ask the patient to listen to the fork as he closes first one ear and then the other. Be sure that he hears as he really does, not as he thinks he ought to hear.

The fork best adapted to ordinary use will be one that is fairly loud and one sounding the note C2, that is, 512 vibrations per second.

Use of the Watch in Testing Hearing.

On a wooden eighteen-inch ruler, at the inch marks, I have inserted small hooks, on which a watch can be hung by a rubber band. This piece of rubber prevents vibrations being conducted along the ruler. Then hold the end of the ruler against the head, near the ear, and by changing the position of the watch on the hooks note the distance of the watch from the ear when it is heard. Have the room, in which the test is being made, comparatively free from noise. When testing have the watch approach from a distance and have the patient's eyes covered. When patients can see the watch they will imagine they hear it. If the patient hears the watch tick twelve inches from the ear and a person with normal ears can hear it at a distance of

sixty inches, the patient's hearing may be expressed by the fraction $12/60$. If the watch must be held in contact with the patient's ear we express his hearing by $\text{contact}/60$, and if the watch must be pressed against the ear we call it $\text{pressure}/60$. It will always be best to close with the forefinger the ear not being tested. A cheap watch if it ticks loudly will do for this work.

When treating for deafness it will be best to test by the watch method at each treatment to note what progress is being made. You may test by the voice in a similar way as by the watch. Don't let the patient see your lips, and note how far away he can hear a whisper. If it be two feet and a person can normally hear the same whisper at twelve feet his hearing will be whisper $2/12$.

LESSON 8.

Examination of the Visible Ear (Otoscopy).

These parts are the auricle, external auditory canal, and the membrana tympani. For this purpose a reflector and ear speculum are generally used. The reflector is a concave mirror, with a hole in the center through which the operator looks as he directs the light into the external auditory canal. The mirror is about three inches in diameter and has a focus of from nine to twelve inches. It may be attached to a head band having a ball and socket joint which allows the center to be brought

before the eye of the operator. This mirror may have a handle and be held in the hand before the operator's eye. The sun's rays will prove too hot to be reflected into the ear. Light reflected from a gas mantle will be best. The writer uses a head lamp which throws its light into the ear. The speculum used is Gruber's. These specula come three in a nest of three sizes. The end of these which is inserted in the canal is elliptical instead of round, more nearly to conform to the shape of the canal. Sometimes we can see the membrana tympani without using the speculum. If this can be done it is better to do so. Straighten the canal by drawing the auricle upward, backward and a little outward. If you fail to see the head of the eardrum then you may introduce the speculum. But straighten the canal as above directed, when inserting the speculum. You should be careful in inserting the speculum and avoid causing pain. Note any abnormality of the external ear or canal. Before noting the appearance of the membrana tympani it may be necessary to clear the ear of cerumen or flakes of epithelium. We note in the center of the drum head a small depression and looking upward we can often see Shrapnell's membrane. Note the condition of the anterior and posterior folds. Is the short process prominent or otherwise? Can you note the length and position of the malleus handle? Note the cone of light, its size, shape, and position. Is the general color of the membrana tympani normal?

You should note whether there is any apparent thickening of the membrane. Sometimes a case of deafness is greatly benefited by cleaning the external auditory canal. If it is filled with cerumen or other matter it must be removed.

Examination of the Nasopharynx.

For this purpose we have several small mirrors ranging in size from 00 to 5. The frames of these mirrors are attached to wire handles at an angle of forty-five degrees. One of the these mirrors is slightly warmed and introduced into the open mouth of the patient. It should be carried back to the pharyngeal cavity while holding the tongue down with a tongue depressor. It should be so placed that it will reflect the light into and upward so as to obtain a good image of the vault of the pharynx and the posterior nares. We note the posterior margin of the nasal septum, the pharyngeal tonsil just above it, and still lower, on each side, are the pharyngeal orifices of the Eustachian tube. They look like two open elevations. They have a border of cartilaginous lips which in the normal state has a deep-red color, while the mucous membrane at the tube entrance is lighter in color. If the mucous membrane covering the lips of the tubes is lighter in color and the parts appear shrunken, the tubes are atrophied. If the Eustachian tube mouth appears dilated and swollen and there is mucus showing in it, catarrh of the tube is indicated.

Difficulties of This Examination.

We should not touch the back of the tongue or wall of the pharynx, as a gagging of the patient will start and we cannot proceed with the examination. Should the palate rise and shut off our view we may request the patient to breathe through the nose. To this end it will be best to have the patient take a full breath as you insert the mirror, and then request him to exhale through the nose.

LESSON 9.

The Treatment Proper.

After you have selected your case and you are certain that the external auditory canal is open and free of wax, or other deposit, and that the essential organ of hearing is not seriously impaired, we examine the Eustachian tube by means of the small throat mirrors.

Then if they are closed, or partially so, we carefully insert the forefinger back of the soft palate, at one side of the uvula, on the same side that the tube is closed. Run the palm of the finger outward and forward until you reach the tubercle back of the mouth of the Eustachian tube, then allow the finger to go backward into the fossa of Rosenmüller. In doing this do not use too much pressure, but by using a little pressure, should there be adhesions or adenoids they will be broken up, after a few treatments. About the third or fourth treat-

ment after you have inserted the finger as above you may use a kind of a stretching and pumping motion over the orifice of the tube. This slight manipulation or massage tends to open the tube and to clean it of mucus. At each treatment pull forward on the soft palate. You may do this as you are removing your finger. It stretches the levator and tensor palati muscles, which are attached to the tube and soft palate. This movement tends to empty the tubes.

After you have treated the patient for about a month, three times per week, and you have cleared the space about the tube's mouth of adenoids, morbid growths, and adhesions, you may insert the soft tip of the finger into the tube and rotate it a little. This will cause pain as it breaks up adhesions. After you have opened the tube thus you may further open it with the Politzer air-bag as directed under that head. This should be done two days after the finger tips are placed in the tubes. Two days afterwards use the air-bag again and pull the soft palate forward.

The hand should be well cleaned before the finger is inserted in the throat, and a mild antiseptic should be used on the finger. A 10 per cent solution of iodine and glycerine will be excellent. The patient should use a mild spray or nasal douche twice per day, or better after each meal, as long as he is under your care. This will tend to keep down all inflammation. If, after any of the work, there is undue soreness or inflammation a cold pack may

be placed over the throat just beneath the chin.

In many cases the soft palate will be found to be enlarged, and extending somewhat up into the nasopharynx. This, of course, tends to obstruct the passage of the normal secretions. They are dammed up and collect near the tube orifices. You see then that an enlarged soft palate thus becomes an important factor in catarrhal deafness. In the cartilaginous part of the tube there are folds which also tend to hold the exudates. These should be broken up and massaged away by the finger before you attempt to open up the tubes with the air-bag, as there is danger of blowing the exudates into the middle ear. Massage and bend the soft palate at right angles with the hard palate when it is enlarged. This will reduce it.

In bad cases it is sometimes necessary to keep up the treatment for from three to six months, while in some cases not so severe, pathologically, but where the hearing is badly affected, you will obtain surprisingly good results in a very few treatments.

A Simpler Treatment.

Use the above technique, but very lightly, three times on the first day. The second day use it twice, and perhaps also on the third day. Then use it daily for awhile. Then treat three times per week for two weeks. But do not attempt to place the finger in the tube mouth. Use antiseptic precautions as above. During the last week of treatment use the Politzer air-bag once or twice. This mas-

sage in many cases will open up the tube. Be sure to massage the tubercle of Gerlach and spring the soft palate forward. This loosens the folds in the tube and forces out the mucus. In cases which are quite deaf, but in which the pathological conditions are not so very serious, you may expect good results in a very short time. Be sure always to work over and massage an enlarged soft palate. This is for the purpose of reducing its size. This treatment will improve a speaker's or singer's voice.

The Simplest Treatment.

The simplest and easiest method that I have found for clearing out the Eustachian tubes, and at the same time restoring their patency, is to treat over them each day for a week or ten days before using the Politzer air-bag. They can be reached for the purpose of expressing the mucus by treating over the anterior wall of the nasopharynx, just to one side of the uvula and soft palate. In this way you reach the Eustachian tube through the wall of the nasopharynx, and treat the tube much as you would treat the appendix, manually, through the abdomen.

Use the same antiseptic precautions as in the treatments noted above.

Removal of Cerumen.

When the external auditory canal becomes filled up with cerumen and dead epithelial scales the hearing becomes affected and the mass must be re-

moved. When the mass of material is soft it can be readily removed by syringing with warm water. Sometimes the mass is quite hard, and it will be best to have the patient soften it by filling the ear with warm water several times per day, and at night introducing a few drops of sweet oil. Then the next day you can syringe the ear and remove the mass in this manner. There are times when this is the principal part of the treatment a case of deafness needs.

The Use of the Politzer Air-Bag.

Place the nose-piece of the bag in one nostril and close both nostrils about this nosepiece with the thumb and finger. A little water having been previously placed in the patient's mouth, he is told to swallow. As soon as the operator notes the larynx rise, as the patient begins to swallow, he quickly presses the bag, thus forcing the air into the Eustachian tube and on up to the middle ear. Do not use any more force to accomplish this purpose than necessary. You had better make several attempts than to cause pain or possibly rupture a diseased drum membrane. You can inflate the middle ear of a child easier than that of an adult. For the average practitioner an eight-ounce bag will be the best.

LESSON 10.

A Universal Treatment.

With every treatment of the special nature as outlined above, whichever one you choose as the best for you to give in any given case, the following treatment should be given: If the operator is an Osteopath he should give a treatment thoroughly to loosen up all the cervical muscles, both anterior and posterior. He should also see that the muscles from the cervical region to about the fifth dorsal region of the spine are relaxed and in a normal condition. Should the operator be a Chiropractor, a Mechano-Therapist, or a Drugless Healer of any kind, he should use massage and his own peculiar methods to relax all these muscles.

The following Somapathic treatment may be given by anyone, remembering that the object to be accomplished is to loosen up all the tissues, both muscular and ligamentous. It is well, also, if there be any tightened vertebral joints, to loosen them. If the articulation of the lower mandible is tight loosen that. It will be observed that the treatment, in the main part, is deep massage.

(1) While the patient is in a sitting position, on the side of the table, the operator standing behind, the right hand rotates the patient's head so as to bring the neck of the patient against the thumb of the operator's left hand. This thumb is moved successively along against the arches of the vertebræ, as shown in Fig. 1. This not only helps relax

the muscles and other structures, but secures free motion between the vertebræ.

(2) The patient lies on his back. The operator stands to one side with his hand on the patient's forehead, the other beyond to the other side of the neck. The hand on the forehead rotates the head from side to side, alternately relaxing and stretching the muscles at the back and side of the neck, while the hand placed at the side of the neck stretches the muscles of the neck towards the operator with each movement of the neck. Move the hand on the neck from one position to another as the tissues relax beneath it, and the hand may be brought down onto the shoulder during the process of relaxation. This same treatment may be applied to all the tissues in front of the neck as far down as the clavicles. This treatment is illustrated by Fig. 2.

(3) The hands then may be used to draw up and relax the tissues under the chin. This movement should be circular and deep. Use the points of the fingers to execute this movement. See illustration No. 3.

(4) Then the head may be pushed as far forward as possible onto the chest, loosening the posterior muscles and other tissues far down the spine. See illustration No. 4.

(5) We may also loosen the tissues at the base of the skull by deep circular massage, as illustrated in Fig 5.

(6) As the patient rests in the prone position, lying on his stomach, the operator, with the palms of



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6



Figure 7

his fingers, notes the contracted muscular tissues and relaxes them by pulling them away from the spine on either side. Those contracted muscles often feel like small ropes beneath the fingers. See Fig. 6.

(7) Another way to loosen these muscles along the spine is to have the patient assume the position as above and with a rotary motion of the hands, using considerable force, relax them. See the illustration No. 7.

If the muscles are very tense and do not yield readily to the above treatment you may apply a hot water bag to the back of the neck or a spinal hot water bag to the neck and upper dorsal region of the spine, for about fifteen minutes. You might have the patient do this on the days when he did not come to your office.

(8) In some few cases you may find tightened ligaments of the lower jaw. Insert the forefinger into each ear and have the patient open his mouth. By observing the pressure of the condyles on your fingers and noting whether the mouth opens straight you will determine which articulation is at fault. Thoroughly massage over this articulation and then place a cork between the back teeth on the affected side; then pull up on that side of the chin carefully to stretch the ligaments of the joint.

The above treatment of the neck and upper dorsal region of the back will benefit the eyes as well as the ears, as the nerve supply of the one is much the

same as the other. It will help any catarrhal condition of the head.

In treating the ears it is best to look after the general health of the patient in order to obtain the best results. Nervousness, stomach troubles, liver diseases, female troubles, overeating and drinking, all tend to aggravate most cases of deafness. The appropriate prohibition of all bad habits should be made, and in some cases the proper diet should be followed.

Some cases of head noises are caused by too high blood pressure. The careful physician will take the blood pressure of most of his patients and work to reduce such pressure as is above normal.

BOOKS.

“Practice of Osteopathy” (Murray), the third edition, 422 pages, 122 illustrations, showing just where and how the treatments in every case are applied. Sent prepaid for \$3.50.

“Practice of Osteopathic Gynecology” (Murray). Over 300 pages, with 120 halftone illustrations. Sent prepaid for \$3.50.

“The Successful Promotion of the Practice of Osteopathy” will be sent prepaid for \$1.

Send for circulars describing these books. Also send for circulars describing our large Anatomical Charts, mounted on cloth and rollers.

Address all orders to

THE MURRAY PUBLISHERS
465 Douglas Ave.
Elgin, Ill.

S. G. L.

FEB 3 - 1916

WV 276 M981d 1915

51620520R



NLM 05269760 6

NATIONAL LIBRARY OF MEDICINE